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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

ALEXANDER, MICHAEL P

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/761,941	Applicant(s) BUNYAN ET AL.	
	Examiner Michael P. Alexander	Art Unit 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 08 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) 1-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 32-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/21/04, 7/8/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C.

121:

- I. Claims 1-31, drawn to an apparatus for electrochemical mechanical polishing, classified in class 204, subclass 194+.
- II. Claims 32-46, drawn to a method for electrochemical mechanical polishing, classified in class 205, subclass 662.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as process and apparatus for its practice.

The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice electroplating.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with John Molnar on 2 August 2005 a provisional election was made without traverse to prosecute the invention of II, claims 32-46. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-31 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 32-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Step (c) of claim 32 recites the step of “applying an electrical bias between the workpiece and the layer, **the bias being capable of activating an electrochemical reaction**, and the compound of the layer exhibiting an overpotential for the activation of said reaction greater than said bias”.

The Examiner asserts that **the bias being capable of activating an electrochemical reaction** would be synonymous with ***the actual voltage required to activate a reaction***.

However, on page 6 of the specification of the instant application, the Applicant defines “overpotential” to be the difference between the ***actual voltage required to activate a reaction*** and the theoretical voltage required to activate a reaction. Therefore, the overpotential would always be less than the ***actual***

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voltage required to activate a reaction. Therefore, the overpotential would also always be less than **the bias being capable of activating an electrochemical reaction.**

This contradicts the language in claim 32, which claims that the overpotential would be greater than the bias being capable of activating an electrochemical reaction.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 32-36, 38-41 and 46-47 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (U.S. Pat. Pub. 2002/0119286 A1).

Regarding claim 32, Chen et al. disclose (0154, 0158) an ECMP method for processing a surface of a workpiece, said method comprising the steps of:

(a) providing a polishing article, the article comprising an electrically conductive compound which is formed into a layer having a processing surface, said compound comprising an admixture which comprises: (I) a polymeric component forming a continuous phase in said layer; and (II) an electrically-conductive filler component forming a first discrete phase within said continuous phase, (b) electrically connecting the layer of step (a) to the workpiece.

Regarding step (c) in claim 32, Chen et al. disclose (0143) applying an electrical bias which activates an electrochemical reaction. The Examiner asserts that since the polishing article of Chen et al. is apparently the same as the polishing article of the instant application, then the compound layer of the polishing article of Chen et al. would also fulfill the intended functional limitations of step (c).

Regarding claim 33, Chen et al. disclose (140) that the layer of step (a) has a processing surface, and wherein the method further comprises the additional step following step (a) of: disposing the surface of the workpiece against the processing surface of the layer.

Regarding claim 34, the Examiner asserts that since the polishing article of Chen et al. is apparently the same as the polishing article of the instant application, then the compound layer of the polishing article of Chen et al. would also fulfill the intended functional limitations of claim 34.

Regarding claim 35-36, Chen et al. disclose (159) that said electrically-conductive filler component is graphite particles.

Regarding claim 38, Chen et al. disclose (116) that said polymeric component would be polyurethane.

Regarding claim 39, Chen et al. disclose (164) that the compound comprises between about 5 to about 60 percent of the electrically-conductive filler component, the range of from about 25 to about 60 percent of which would anticipate the claimed limitation.

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Regarding claim 40, Chen et al. disclose (158) that the filler component particles would be in the micron size range.

Regarding claim 41, Chen et al. disclose (164) that the electrical volume resistivity would be less than 1 ohm-cm.

Regarding claims 46-47, Chen et al. disclose (0096) that the article would further comprise a electrically-conductive mesh sheet carrier, having said compound supported in the carrier.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. as applied to claim 33 above, and further in view of the ASM Handbook, Volume 2.

Regarding claim 37, Chen et al. teach that the electrically-conductive filler component may be conductive metals that are relatively inert to chemical reactions with the surrounding electrolyte, but do not specify tin. However, the ASM Handbook, Volume 4 (pages 518-519) disclose that tin is an electrically conductive metal that is relatively inert in near-neutral solutions. It would have been obvious to one of ordinary skill in the art to modify the method of Chen et al. by using tin as the electrically-conductive filler component because tin is a conductive metal that is relatively inert to chemical reactions with near-neutral solutions as taught by the ASM Handbook, Volume 4.

Claims 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. as applied to claim 33 above, and further in view of Reinhardt et al. (U.S. Pat. 5,578,362).

Regarding claims 42 and 44-45, Chen et al. do not specify a resin filler forming a second phase within the continuous phase, the second phase being free of electrically conductive filler component. However, Reinhardt et al. disclose (col. 1 line 67 col. 2 line 5 and col. 5 lines 36-60) adding polyethylene oxide, having a mean diameter of about 10 microns, forming a second discrete phase within said continuous phase in order to control variable such as pore size, shape and distribution. It would have been obvious to one of ordinary skill in the art to modify the method of Chen et al. by adding polyethylene oxide having mean diameter of about 10 microns forming a second discrete phase with said continuous phase in order to control variables such as pore size, shape and

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distribution. Reinhardt et al. do not disclose that the resin filler microelements would have be comprised of any electrically-conductive filler component.

Regarding claim 43, Chen et al. do not specify 1-10% of resin filler. However, Reinhardt et al. disclose (col. 1 line 67 col. 2 line 5 and col. 5 lines 36-52) that resin filler component is added to control variable such as pore size, shape and distribution. Since the amount of resin filler component is a result effective variable as taught by Reinhardt et al., it would have been obvious to one of ordinary skill in the art to select the desired resin filler component concentration as a routine optimization.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Alexander whose telephone number is 571-272-8558. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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